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ABSTRACT

This paper is a synopsis of a study of information needs in education undertaken to identify patterns that imply user requirements for effective information services. The findings of the study show that the educational information user market can be readily segmented by work roles (teachers, higher education faculty, state school board members, local education agencies). Among these work roles, significant patterns of similarities and differences can be discerned in terms of the kinds of information sources preferred, the tolerable delay in the delivery of information, preferred information source characteristics, preferences for information products and services, and problems in accessing and using information. (MM)

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The Market for Education Information

A Synopsis of

The Educational Information

Market Study

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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PREFACE

This paper is a brief synopsis of "The Educational Information Market Study," recently completed by Paul Hood, with contributions from Robert Katter, Laird Blackwell, and Colin Mick. The synopsis reports selected patterns identified in the research results. These patterns represent broad facets of information needs in the field of education. The kinds of information educators need, the reasons they look for information, and the sources they prefer to use are addressed. No attempt has been made in this synopsis to go beyond the research results and draw implications for specific improvements in education information systems.

It is hoped that this research will prove interesting to policy makers concerned with the dual problems of understanding information needs and designing information systems capable of addressing those needs.

Appreciation is extended to Ralph Cyr of the ERIC Clearinghouse on Teacher Education for preparing this synopsis.

Mollie MacAdams
National Institute of Education

INTRODUCTION

The emergence of information systems and services for educators is a significant development in American education. Reference services, publications programs, radio and television series, even document based computer systems offer valuable knowledge resources. These services play a major role in translating basic research into classroom practice. Classroom teachers and higher education faculty increasingly rely on such services to stay abreast of the burgeoning body of knowledge on teaching and learning. Administrators challenge these services to provide readily usable information for the increasingly complex decisions they face. As the role of information services grows, so does the problem of ensuring that the information they offer is responsive to the needs of their audiences. The fact that information needs in education are not well understood makes it difficult for policy makers and managers to design products, services, and systems that are fully able to satisfy the people they set out to serve.

This paper is a synopsis of a recently completed study of information needs in education. That study, entitled "The Educational Information Market Study," explores information needs from several perspectives. The study was undertaken to identify patterns which imply user requirements for effective information services. Highlights of the study's results are briefly presented here. It is not the intention of this paper to report all the study's findings but rather to present identified patterns in information needs related to sources of information preferred by educators, their purposes for needing information, characteristics of preferred information sources, actual information products and services preferred, and--finally--problems educators encounter when they are looking for information. (For the full research report, see IR 004 570-571.*)

"The Educational Information Market Study" represents a significant contribution to the body of knowledge about information needs in education. It is hoped that research such as this will provide a basis for understanding how information needs can be identified and the requirements which emerging information systems should be capable of meeting.

SYNOPSIS

The study was conducted in two phases. The first consisted of field interviews, the second a mail survey. This synopsis will focus on results of the mail survey which are generalizable to the population of education information users. Respondents include four major groups: elementary and secondary practitioners, elementary and secondary administrators, higher education groups, and governance groups. A separate section at the end of this paper briefly covers the overall design and methodology of the study. Readers interested in detailed analytical procedures are referred to the study itself.

* The full research report is listed under the following titles in the ERIC system:

IR 004 571 (Volume I): "National Information Market Study. Study of Information Requirements in Education." Paul D. Hood and others.

IR 004 570 (Volume II): "Survey of Education Information Service Sites. Study of Information Requirements in Education." Robert V. Katter and Cynthia Hull.

HIGHLIGHTS

SOURCES PREFERRED BY USERS

Information sources include informal, face-to-face discussions among friends and colleagues, as well as formal information services available through libraries and publishers. Respondents were asked to indicate how frequently they used 18 information sources in connection with their most important work activity. TABLE 1 depicts the overall responses across all user subaudiences.

Generally, the local, easily accessible sources--people in own organization, notes and files in own office, personal library, journals, newsletters, memos, and correspondence--are the more frequently used sources. Contacts (face-to-face or by telephone) with people in other organizations follow; next come the more formal local information sources--library or resource center in own organization; office, department, or organization files. Conventions or professional association meetings and workshops, seminars, and graduate courses are similar kinds of sources, which are less frequently used. Text and reference books and curriculum materials are two types of instructional sources which are frequently used by those subaudiences most concerned with instruction, but they are used far less frequently by other subaudiences. Three sources--technical reports and government publications; other libraries, resource centers, or information services; and abstracts, indexes, and bibliographies--are used relatively less frequently by most user groups.

These rankings are very similar to those obtained in the field interviews when respondents were asked to indicate the difficulty in using the information sources. As one might expect, users tend to employ information sources that they find easy to use.

TABLE 1. Frequency of Use of 18 Information Sources Based on Unweighted Averages of 14 Subaudiences (1 = Often, 2 = Sometimes, 3 = Rarely)

Item	Average	Rank
Face-to-face discussion of conferences with people in my own organization	1.35	1
Notes and files in my own office	1.46	2
Educational newsletters, bulletins, announcements	1.72	3
Telephone calls to people in my own organization	1.76	4
Educational journals	1.80	5
Personal library	1.85	6
Memos and correspondence	1.87	7
Face-to-face discussion or conferences with people in other organizations	1.88	8
Telephone calls to people in other organizations	1.92	9
Library or resource center in my own organization	1.95	10
Office, department, or organization files	2.00	11
Conventions, professional association meetings	2.01	12
Workshops, seminars, graduate courses	2.06	13
Textbooks, reference books	2.08	14
Curriculum materials	2.18	15
Technical reports, government publications	2.22	16
Other libraries, resource centers, or information services	2.33	17
Abstracts, indexes, bibliographies	2.40	18

When the frequency of use of the 18 information sources is broken down by subaudiences, patterns differ significantly.

- Teachers tend to make frequent use of text and reference books, personal notes and files, curriculum materials, and face-to-face contacts with individuals in their own organization.

- Principals tend to use face-to-face discussions; educational newsletters, bulletins, and announcements; educational journals; and curriculum notes. They tend to be infrequent users of abstracts, indexes, and bibliographies; technical reports and government publications; telephone calls to other organizations; and libraries.

- LEA (local education agency) staff are among the most frequent users of newsletters, bulletins, and announcements. They are also frequent users of face-to-face discussions, telephone calls to individuals in their own organization, office files, and memos and correspondence.

- SEA (state education agency) staff use memos and correspondence, department files, internal and external telephone calls, and face-to-face discussions.

- Higher education administrators tend to use face-to-face discussions with their own staff and faculty very heavily. They also use internal telephone calls, memos and correspondence, external telephone calls, and conventions and professional meetings. They rarely use libraries; information and resource centers; abstracts, bibliographies, and indexes; or text and reference books.

- Social scientists and higher education faculty tend to be the major users of bibliographic information sources; personal libraries; the library of their own organization; personal notes and files; educational journals; text and reference books; abstracts, indexes, and bibliographies; and other libraries and information services.

While differences in use occurred among the subaudiences, some patterns of use across subaudience groups were also found.

- Instructional staff (teachers, higher education faculty, social scientists) tend to be users of libraries, textbooks, and curriculum materials and relative nonusers of interpersonal sources such as face-to-face contacts and telephone calls. Administrators, in contrast, are major users of all types of interpersonal sources, in addition to memos, correspondence, and their own organization and office files.

- Social scientists and higher education faculty are among the most frequent users of bibliographic sources and references to bibliographic sources (own notes and files; libraries; text and reference books; journals; and abstracts, indexes, and bibliographies). Conversely, these two subaudiences are among the least frequent users of office, department, or organization files. Governance groups (LEAs, SEAs, and state legislators) exhibit the greatest similarity in the sources they do not use: abstracts, indexes, and bibliographies; curriculum materials; personal libraries; and conventions and professional meetings.

TURNAROUND TIME

With respect to the allowable time lapse for the delivery of information, about 30 percent of the respondents reported that they require information dealing with important work activities within one day. Another 29 percent reported a wait of two or three days to be acceptable, and 24 percent indicated that one week is an allowable delivery period. These findings suggest that most users require a reasonably fast turnaround on their requests for information. An average response time of one to two days would be optimal with a maximum turnaround of one week.

PURPOSES FOR NEEDING INFORMATION

There are many reasons educators name for seeking information. Some concern the need to keep aware of developments in the field. Others are more concerned with addressing an immediate problem.

The various user subaudiences exhibited significantly different responses on their ratings in eight out of nine purposes for seeking information. There were, however, strong similarities among some groups of subaudiences.

- Keeping aware of developments and activities in education was rated first or second by every subaudience except federal legislative aides.

- Finding answers to specific questions was the need rated second overall, and the highest ranking need for federal legislative aides and institutional researchers.

- Identifying new sources of assistance for improving my work was ranked relatively high by all subaudiences except those concerned with governance.

- Developing alternative approaches to solving problems in my work was the one purpose on which there were no significant differences among subaudiences.

- Identifying new educational programs, methods, materials, or products was ranked second or third highest for the practitioner subaudiences, higher education faculty, and LEA and ISA (intermediate state agency) administrators. Conversely, it ranked low (sixth or seventh) for SEA administrators, higher education chief administrators, and local school board members, and lowest (ninth) for legislators, aides, and institutional researchers.

• Keeping aware of who is knowledgeable in a subject or problem area ranked low for all groups except state legislators.

• Evaluating educational practices or products was ranked moderately high (second to fourth) by state school boards, local school boards, and higher education chief administrators and low (sixth or seventh) by all other groups.

• Locating information to provide to others was ranked low by most of the subaudiences with the exception of SEA administrators, institutional researchers, and federal legislative aides, who ranked it second or third.

• Preparing articles, reports, or speeches was ranked very low by all subaudiences except federal legislative aides.

The significant differences in ratings among subaudiences help to confirm the common assumption that different audiences would have different reasons for seeking information. However, it is important to note that there were some strong general patterns among the responses. Overall, keeping aware of developments and activities in education was the highest rated need, with finding answers to specific questions ranked second. Identifying new sources of assistance for improving one's work and developing alternative approaches to solving problems also ranked high. Conversely, most audiences had only minimal need for information to prepare reports, articles, or speeches.

USER PREFERRED SOURCE CHARACTERISTICS

The question of why information users prefer one source over another is explored in this study. TABLE 2 presents the rankings of characteristics that users look for in their first and second preferred information

TABLE 2. Rank Order of Overall Rankings of Reasons for Preferring Information Sources

REASON FOR PREFERRING	SOURCES	
	#1*	#2**
is likely to have the information I want	1	3
is near at hand or easily accessible	2	2
is responsive to my particular problem or question	3	6
is easy to use	4	1
is usually available when I need it	5	4
keeps me aware of new developments	6	5
is up to date	7	8
provides for new ideas or different viewpoints	8	12
is authoritative, accurate, reliable	9	10
leads me to other sources	10	7
provides opportunity for discussion or exchange of ideas	11	9
is fast in responding	12	11
is complete, comprehensive	13	13
is free or inexpensive	14	15
is objective, impartial, not biased	15	14

* #1 - source preferred most
** #2 - second most preferred source

sources. In both first and second choices "convenience" characteristics (likely to have the wanted information, is accessible, is easy to use, is usually available) rank high; while characteristics such as comprehensiveness, low cost, and objectivity are consistently ranked very low.

When users were asked to evaluate both their most preferred information source and their second most preferred source, a notable difference resulted. The reason "easy to use" ranks fourth in the first preferred choice but first in the second preferred choice. Also, the reason "leads me to other sources" ranks higher for the second choice (7) than for the first choice (10). Apparently, once a user decides that the primary source is not going to yield the necessary information, ease of continued searching becomes the most important consideration. This observation is further supported by the drop in ranking of "is responsive to my particular needs" from third for the first preference to sixth for the second choice.

USER PREFERRED PRODUCTS AND SERVICES

Educational information systems offer a variety of products and services, such as newsletters, state-of-the-art papers, and so forth. In the study of user preferences for products and services of educational information systems, several group patterns become apparent:

- School Practice Oriented Groups. High preferences among these groups (teachers, principals, and "other" practitioner staff) are: classroom and curriculum materials, solutions to common educational problems, regularly mailed information of interest, educational trends and issues, and educational news and current events. They are also more receptive to receiving help in trying out new ideas and, at least relative to other audiences, see more use in information agent

service visits. Like nearly all other groups, they find information on the evaluation of educational programs and practices useful. They are much less interested in educational statistics, or lists of experts in education.

• Administrators and Staff of Education Agencies. The administration audiences (LEA, ISA, SEA) and other higher education audiences (chief administrators, institutional researchers, social scientists, and faculty) tend to mirror the practitioners to some degree in their preferences for more popular items, including regularly mailed information, educational trends and issues, education news and current events. solutions to common educational problems, and evaluation of programs and practices. However, these groups place relatively more value than practitioners and other LEA subaudiences on education-related statistics and education-related legislation, and less emphasis on classroom and curriculum materials.

• Higher Education Chief Administrators. Among the four higher education users, each of the four subaudiences displays a somewhat different pattern of preferences. Generally the chief administrators tend to give usefulness ratings that are similar to LEA, ISA, and SEA staffs. Chief administrators in higher education institutions consider information products concerned with evaluation of educational programs, educational trends and issues, and solutions to education problems to be especially useful. Compared with other subaudiences, they see more use for innovation case studies.

• Institutional Researchers. This subaudience sees little use for curriculum materials, innovation case studies, education-related legislation, service agent visits, or help in information needs diagnosis; however, they are the prime audience for education-related statistics or to-order studies of education statistics.

• Social Scientists. This subaudience, which consists of campus-based, non-student AERA members in RDD&E, is distinguished from virtually every other user group in its positive usefulness ratings of information products concerning education research methodology, deep reviews of selected study areas, and annual reviews of education; and also of a number of services such as very rapid literature searches, quick reference service, quick referral service, and rapid full document delivery. In general, these preferences confirm expectations; the point to note is that the social scientists are almost alone among the 14 subaudiences in their strong preferences for these kinds of products and services. To the extent that educational information systems have used "R&D" or "scientific" information systems as models in their design assumptions, they may serve social scientists well, but at the possible cost of failing to consider the relative product and service preferences of virtually every other class of education information user.

• Higher Education Faculty. In some respects the faculty of colleges and schools of education are most similar to social scientists; however, they also exhibit several differences. They see more value in classroom and curriculum materials, innovation case studies, education news and current events, education trends and issues, education concepts and philosophy, and help in trying out new ideas. Conversely, they are less likely than social scientists to see as much use in research methodology, deep reviews, quick referral or reference services, rapid literature searches, or help in forming search queries. Despite the fact that higher education faculty see less value than social scientists in this array of types of "research" and "information system" products and services, they tend to see more use in these products and services than do virtually any of the other subaudiences.

• Local School Boards. The local school board members tend to mirror the concerns of the other LEA (practice-oriented) audiences. They especially value the usefulness of evaluation of programs and practices, solutions to common education problems, education news and current events, regularly mailed information, education trends and issues, and annual reviews of education. Along with state boards and state legislators, they are somewhat more likely to see the value of help in interpreting information than do other subaudiences.

• State Board Members. This group exhibits a preference pattern somewhat similar to local boards (and also to SEA staff). State board members are remarkable in terms of the relatively high use value they (along with higher education chief administrators) place on information concerning educational trends and issues, and on regularly mailed information. Compared with local boards, state board members see relatively less use for information about classroom and curriculum materials, for quick reference service, for information needs diagnosis service, and for help in how to use information services; but relatively greater use for education-related statistics, education news and current events, education trends and issues, education concepts and philosophies, and regularly mailed information.

• Legislators. The two legislative subaudiences tend to be set apart from all other subaudiences in terms of the low use value they place on information about classroom and curriculum materials, and on innovation case studies. Federal legislative aides are even further removed from most subaudiences in their infrequent use of educational concepts and philosophy.

None of the governance audience (boards and legislators) places high use value on education research methodology, but they all value education-related statistics and education-related legislation.

• Federal Legislative Aides. Compared with state legislators, federal legislative aides see markedly less value in information on solutions to common education problems, and less use for lists of experts in education, information about education concepts and philosophies, and most of the "bibliographic" information services (quick referral, rapid searches, help in forming search queries, information needs diagnosis). They also see less use for information service agent visits, help in trying out new ideas, or help in interpreting information. There are two possible reasons that seem plausible for these differences between federal aides and state legislators. First, the federal legislative aides tend to be "specialists" in education legislation and in the research of educational information needed for legislation; while the state legislators are elected officials, some of whom are part time legislators and most of whom must deal with many types of legislative content areas rather than with education exclusively. Second, the federal legislative aides have the information resources of the Library of Congress to use as information intermediaries and synthesizers, whereas state legislators are, with some minor exceptions, much less "information-rich" in their research resources.

PROBLEMS IN ACQUIRING AND USING EDUCATIONAL INFORMATION

Problems in acquiring and using educational information fall into two general categories: problems related to difficulties with information sources, and problems related to user capacity to find information. In general, response rates in this area were low, ranging from 10 percent for teachers to 40 percent for federal legislative aides.

• Information Base. Among the problems concerned with information sources, 30 percent dealt with information collection: 13 percent of the respondents indicated that the type of information they sought was scarce or non-existent, and 17 percent that the information they found was not adequate for their purposes--e.g., low quality, unreliable, or not current.

• Organization, Analysis, Retrieval. Twenty-five percent of the problems with information sources dealt with information organization, analysis, or retrieval: 10 percent of the respondents indicated that the information they sought was inadequately cataloged, indexed, or otherwise not retrievable, and 14 percent indicated that the information they received was not adequately summarized, organized, synthesized, or analyzed in useful ways.

• Access and Dissemination. Twenty percent of the information source problems concerned access and dissemination: eight percent of the respondents indicated that useful information was not distributed widely or frequently; eight percent indicated that information was not accessible locally; and four percent reported incidents of resistance, lack of cooperation, slow response, or outright refusal to supply information.

• Difficulties with User Capacity. The 15 percent of the problems related to difficulties with user capacity fall into two categories: nine percent of the respondents reported a lack of resources (people, time, and money) needed to search for information, and six percent said that they did not know where to look for the information they needed.

SUMMARY

The findings of the study show that the educational information user market can be readily segmented by work roles (e.g., teachers, higher education faculty, state school board members, local education agencies). Among these work roles significant patterns of similarities and differences can be discerned in terms of the kinds of information sources preferred, the tolerable delay in the delivery of information, purposes for seeking information, preferred information source characteristics, preferences for information products and services, and problems in accessing and using information.

SOME NOTES ON THE STUDY METHODOLOGY

THE FIELD INTERVIEWS

The purposes of the field interviews were to develop an in-depth understanding of user information needs, to develop and refine a conceptual framework and associated data-analytic methodology, and to provide the basis for the design of a projected mail survey using a comprehensive national probability sample of all user types.

The researchers developed a model of information user and information use variables which they tested by interviewing a nonrandom sample of 137 key educators representative of 18 educational roles and 40 localities. The model, with its seven variable sets, is depicted in FIGURE 1. The arrows between the variable sets represent relationships of varying strengths as posited by the researchers. For example, position variables (2) have a strong relationship with purpose variables (6), and a somewhat weaker relationship with sociometric variables (5).

The findings of the field interviews provided empirical verification of the relationships posited in the model. The reader should, however, keep in mind the small sample involved.

THE MAIL SURVEY

A sample of four major audiences and 14 subaudiences was drawn. The audiences surveyed are depicted in TABLE 3. An overall response rate of 50 percent, totaling 1328 individuals, was achieved. Within the usable sample returns, response rates ranged from 23 percent for state legislators to 69 percent for higher education administrators.

FIGURE 1. EDUCATION INFORMATION USE MODEL
Type of Variable (and Example Variables)
and Their Posited Relationships

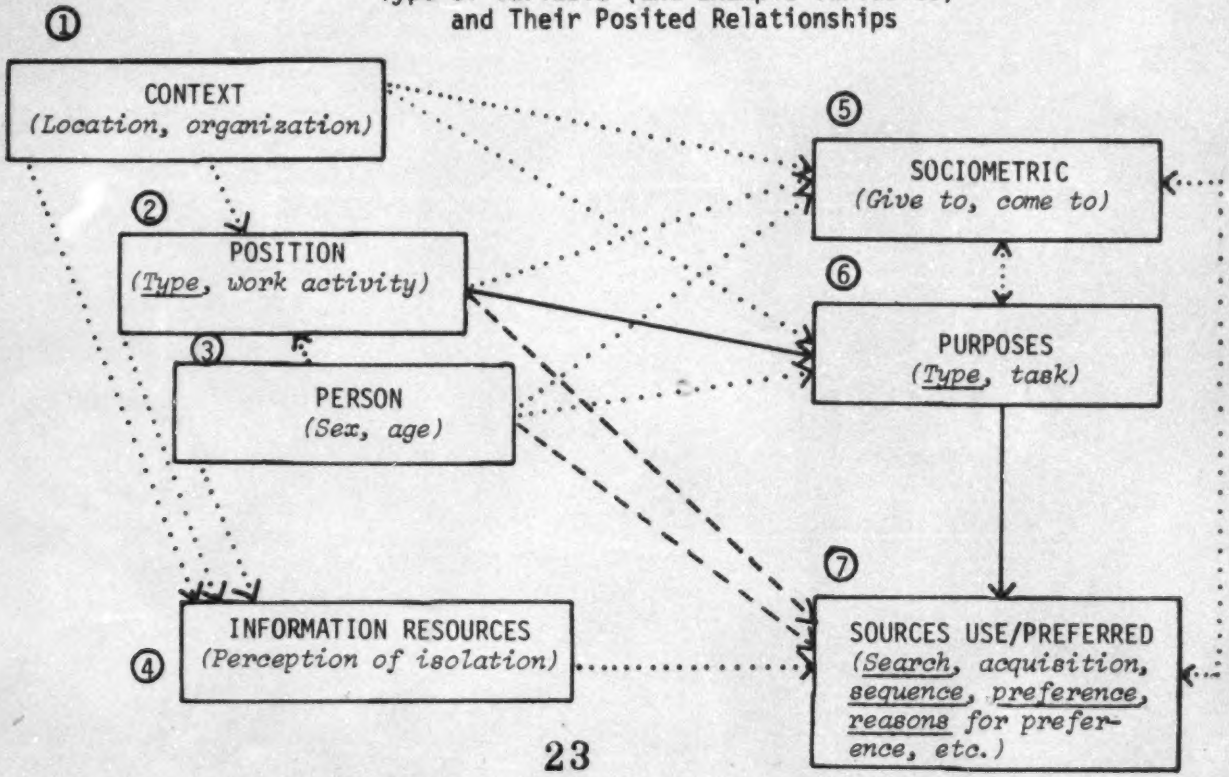

TABLE 3. Mail Survey Audiences

1. Elementary and Secondary Practitioners

    1.1 Teachers
    1.2 Principals
    1.3 Other instructional staff

2. Elementary and Secondary Administrators

    2.1 School district staff
    2.2 Intermediate unit staff
    2.3 State education agency staff

3. Governance Groups

    3.1 State school board members
    3.2 Local school board members
    3.3 State legislative aides
    3.4 U.S. Congressional aides

4. Higher Education Groups

    4.1 Faculty of school of education
    4.2 Social science RDD&E staff
    4.3 Institutional researchers
    4.4 College presidents and chief administrators